Navigating New Norms: A Two-Year Follow-Up on Japan's Digital Native Evolution

Daniel J. Mills, Ritsumeikan University, Japan
William Marshall, University of Shiga Prefecture, Japan

The Asian Conference on the Social Sciences 2024
Official Conference Proceedings

Abstract
This study investigated changes in device and course modality preferences, technology-related stress, and data privacy knowledge among first-year undergraduate students at a private university in Western Japan from 2022 to 2024. Utilizing a questionnaire adapted from the 2022 Educause Student Technology Survey, data were collected from 109 students in 2022 and 45 students in 2024. Results indicated consistent primary device ownership, with laptops remaining the most common primary device (65% in 2022 and 63% in 2024). However, it was found that more students were increasingly adopting tablets (2% in 2022 and 4% in 2024). A significant reduction in stress related to running applications and device configuration was observed. Additionally, there was a notable decrease in the preference for blended learning (half online and half face-to-face), from 39% in 2022 to 24% in 2024. Regarding data privacy, the percentage of students who rated their familiarity as below average increased significantly from 9% in 2022 to 35% in 2024. Social media and teachers remained the primary sources of data privacy knowledge, though learning from news sources decreased significantly. These findings suggest a shift towards more face-to-face interactions post-pandemic and highlight the need for improved technological infrastructure and enhanced data privacy education. The insights gained are crucial for developing effective strategies to support students' technological and educational needs in a rapidly evolving digital landscape.

Keywords: Device Preferences, Course Modality, Higher Education, Technology Adoption, Technology Stress, Privacy

iafor

The International Academic Forum
www.iafor.org

Introduction

Japan, a global hub of technological innovation, has historically been perceived as lagging in the field of educational technology. The COVID-19 pandemic, which necessitated a swift transition to online distance education, brought this disparity to the forefront. Both teachers and students faced significant challenges in adapting to the new mode of delivery. However, the pandemic also served as a catalyst for digital transformation in Japanese educational institutions, which are often characterized by their slow pace of change.

While most classes have returned to face-to-face delivery post-pandemic, the technology adopted during this period continues to be utilized. This ongoing use of educational technology is evident to many long-term educators in Japanese higher education. Traditionally, Japanese students accessed the internet via mobile phones. However, there has been a noticeable increase in the use of laptops and tablets in classrooms. This shift suggests greater access to technology and a significant improvement in students' technological capabilities and confidence.

To examine these changes, a quantitative survey was administered to students at a Japanese university. The survey utilized a modified and translated version of the ECAR Student Technology Survey. This study aims to present the results of this survey, offering insights into how the technological landscape in Japanese higher education has evolved. This information is essential in understanding students' preferences and proficiency in using technology for educational purposes in Japanese universities.

Literature Review

Online and Blended Learning

Blended learning emerged as a compelling solution for the future of education (Ehrlich et al., 2020; Jones & Sharma, 2020). Heirdsfield et al. (2011) described blended learning as a strategy that combines online and face-to-face learning, creating an environment where students have enthusiasm for the educational process. Alducin-Ochoa and Vázquez-Martínez (2016) suggest that blended learning, with its emphasis on online learning outcomes, can enhance student engagement leading to improved performance.

The COVID-19 pandemic accelerated the adoption of online education, which created the need for teaching methods that could adapt to a rapidly evolving environment (Szopiński & Bachnik, 2022). As a result, researchers began urging educational institutions to embrace blended learning models (Finlay et al., 2022; Theoret & Ming, 2020).

The online component of blended learning is a convenience that has been a welcomed addition to a traditional learning environment. Baczek et al. (2021) conducted a study among Polish medical students, revealing that 69% of respondents highlighted the ability to stay home and continuous access to online materials as the primary advantages of online learning. Additionally, the flexibility to learn at one's own pace (64%) and the comfort of surroundings (54%) emerged as significant benefits. At the same time, 70% of subjects reported difficulties resulting from lost opportunities to interact with patients as a primary concern, suggesting careful implementation of online learning to ensure medical students can develop necessary clinical skills. A blended approach offers a happy medium between classes that are either fully online or face-to-face.

Expanding on the varied preferences for course modality, a survey of undergraduate students in Malaysia found that students preferred blended learning during the pandemic because students feel that it is safer and more flexible, while face-to-face was the mode of choice once COVID-19 was no longer a concern (Mali & Lim, 2021). Other studies also found students preferred face-to-face learning environments (Asih & Alief, 2022; Carrasco et al., 2022). Mali and Lim (2021) conclude that educators should consider incorporating social elements into blended learning to enhance the student experience.

Peimani and Kamalipour (2021) offered insights into the post-COVID-19 landscape, students' perspectives, and educational encounters in online learning. Although live online reading seminars allowed for interaction between students and tutors in small groups, they lacked effectiveness in fostering synchronous communication among a diverse student body. This highlights the difficulty online courses encounter in offering students the chance to interact with their peers and establish strong connections.

The challenges of online learning extend beyond reduced interaction. Access to stable internet and high-quality technological resources is critical for students to engage effectively in online courses (Peimani & Kamalipour, 2021). Elsaid et al. (2021) observed that students in Egypt faced significant technical problems, emphasizing the need for stable internet connections and well-equipped devices. Learners in rural areas, in particular, were affected by limited internet access and technical issues, which led to an inability to stay current with ongoing lessons (Mahyoob, 2020).

While the online aspect of blended learning has presented both advantages and disadvantages, discussions about the future of education post-pandemic are leaning towards advocating for blended learning (Fang et al., 2023; Sharma & Shree, 2023). This approach is seen as a flexible solution that addresses the challenges of online education by incorporating face-to-face interactions into the learning environment. For instance, Sharma and Shree (2023) explored the effects of various educational approaches—online, face-to-face, and blended—on higher education during the post-pandemic period. Their research revealed that facilitation, such as program organization, active engagement, and feedback, excelled in blended learning. Students expressed that navigating courses in a blended format was more manageable than in purely online or face-to-face settings, viewing blended education as a proficient platform for their learning endeavors.

The integration of online learning into university classrooms has shown considerable staying power post-pandemic. Official data from the National Center for Education Statistics (NCES) in the United States demonstrate the continuation of this trend through its Integrated Postsecondary Education Data System (IPEDS). According to NCES (2022), before the pandemic in Fall 2019, 35.9% of students in public postsecondary institutions were enrolled in distance education courses. This figure jumped to 77% in Fall 2020. By Fall 2022, the number of students taking distance education classes had dropped post-pandemic to 55.4% but remained significantly higher than the pre-pandemic levels of 2019.

Preferred Devices

The COVID-19 pandemic forced a rapid shift to online learning, making the choice of devices crucial for students' success. Interestingly, research suggests that device preferences varied across studies, indicating a complex landscape of individual needs and contextual factors influencing technology adoption in education.

Laptop computers were the most popular learning tools in South Korea (Shim & Lee, 2020), with 69.82% of students using them, followed by desktop computers (15.44%). Phones and iPads accounted for only 8.29% and 6.45% of usage, respectively. Shammari (2021) found similar results in Saudi Arabia, with 60% of participants preferring laptop computers for online learning, followed by tablets (21%), desktop computers (14%), and smartphones (4.7%).

Meanwhile, preferences for learning tools varied significantly in other countries. In India, Muthuprasad et al. (2020) found that undergraduate agriculture students preferred smartphones (57.98%) for their learning, followed by laptops (35.83%) and tablets (4.89%). Similarly, Edelhauser and Lupu-Dima (2020) found that students in Romania favored smartphones slightly more than laptops for online learning during the COVID-19 pandemic. Nepal et al. (2020) also found that most of the 226 Nepalese medical students surveyed used smartphones (69.5%) to attend classes during the lockdown period.

Information Security

Information security, an issue predating the COVID-19 pandemic, was brought to the forefront and continues today as more education has an online component. As a result, students, as well as university faculty and staff, have been tasked with maintaining personal information and data to a greater extent than in the past. Awareness of this issue can vary from person to person. An individual's realization of the importance of information security has been defined as information security awareness (Siponen, 2000).

Slusky and Partow-Navid (2012) surveyed students in the College of Business and Economics at California State University, Los Angeles. They found that information security awareness was present; however, the knowledge they did have needed to be more generalizable to real-world situations. Similarly, a more recent study of Chinese university students during the pandemic found that most of them understood the importance of information security (Wang, 2022). However, the authors did not find that the awareness they had led to competence in managing files and passwords. Furthermore, Avci and Oruc (2020) investigated Turkish university students, and while the majority demonstrated awareness of information security, some still had either very little or none at all.

Research Purpose and Questions

The purpose of this research was to examine how Japanese university students' usage of technology to learn transformed after the global pandemic. The following research questions were addressed in this study:
1. How have students' device and course modality preferences changed from 2022 to 2024?
2. What are the trends in technology-related stress among students between 2022 and 2024, and what factors contribute to this stress?
3. How has students' familiarity with and knowledge of data privacy evolved from 2022 to 2024, and what sources contribute to their understanding?

Methodology

Setting and Sample

The setting for this research was a private university in Western Japan, with approximately 32,000 undergraduate students attending across three campuses. All participants were first-year undergraduate students enrolled in required English as a Foreign Language (EFL) courses within the Economics or Information Science faculties. A total of 109 students participated in the study in 2022, while 45 students participated in 2024.

Participants

Participants were first-year undergraduate students at a private university. The 2022 cohort consisted of 109 students, and the 2024 cohort included 45 students. These students were chosen as they were all enrolled in mandatory EFL courses, ensuring a consistent sample regarding academic background and technological needs.

Instrument

Data was collected using a questionnaire administered through Google Forms and distributed via a link in the course's Learning Management System (LMS). The questionnaire assessed technology usage across three main themes: 1) Equitable Access, 2) The New Normal, and 3) Data and Privacy Security. The survey instrument was adapted from the 2022 Educause Student Survey and comprised 39 items and utilized various question types, including multiple-choice, Likert-scale, and open-ended questions. A skilled Japanese native researcher, fluent in Japanese and English, translated the survey items from English to Japanese. A second native Japanese speaker then reviewed the translation to ensure clarity and accessibility for all participants.

Data Collection and Analysis

Data collection occurred during the Fall semesters of 2022 and 2024. The Google Forms questionnaire was administered to students through the university's LMS. Both Japanese and English versions of the survey were provided, accompanied by a cover letter detailing the study and outlining participants' rights in both languages. The cover letter emphasized the voluntary nature of participation and assured students that their involvement would not affect course evaluations.

After data collection, the researchers transcribed the responses into an Excel spreadsheet for analysis. These spreadsheets were uploaded into ChatGPT 4o, where an initial analysis was conducted to identify major trends in the data. The data was then analyzed in Excel using frequencies, percentages, and descriptive statistics to examine all items comprehensively. Additionally, the data was compared between the 2022 and 2024 cohorts to identify trends and changes in technology usage, preferences, and challenges over the two years. This comparative analysis provided insights into the evolving landscape of educational technology and data privacy awareness among first-year undergraduate students at the university.

Results and Discussion

Primary Device Ownership

The study revealed consistent primary device ownership among first-year undergraduate students in 2022 and 2024. In 2022, all participants (100%) owned their primary device, which was predominantly a laptop (65.14%), followed by smartphones (30%), desktops (4%), and tablets (2%). In 2024, this trend continued with 100% ownership of primary devices, with laptops remaining the most common primary device (63%), followed by smartphones (30%), desktops (2%), and tablets (4%). These results align with previous research indicating the predominance of laptops for online courses in South Korea and Saudi Arabia (Shim & Lee, 2020; Shammari, 2021) while running contrary to findings from Indian (Muthuprasad et al., 2020) and Romanian (Edelhauser & Lupu-Dima, 2020) surveys which found students overwhelmingly preferred smartphones for their online studies. The regional differences in primary device ownership suggest varied preferences based on accessibility and specific educational needs.

The slight increase in tablet ownership is noteworthy and aligns with the growing availability of eBooks and digital resources optimized for tablet use.

Reasons for Using Secondary Devices

The primary reasons for using secondary devices remained consistent between 2022 and 2024. In 2022, the leading reasons were Wi-Fi issues (30.28%), multitasking or using multiple screens (28%), and features/functions not available on the primary device (18%). In 2024, Wi-Fi issues remained the top reason (30%), followed by multitasking (28%) and features/functions not available on the primary device (17%). The consistency in these reasons demonstrates the importance of reliable internet access and the need for multiple devices to support students' academic tasks.

Technology Issues Experienced

Students reported various technology issues, with notable changes between 2022 and 2024. In 2022, 52% of students experienced unstable internet connections without stress, while 16% found it stressful. By 2024, the percentage of students experiencing stress due to unstable internet connections had more than doubled to 39%. Conversely, the results of a chi-square test of independence showed a significant reduction in stress related to running applications and devices not being correctly configured in 2024 compared to 2022. The findings support the literature that encourages addressing technological challenges in order for students to be able to engage actively to promote effective online learning experiences (Elsaid et al., 2021; Mahyoob, 2020; Peimani & Kamalipour, 2021; Smyth et al., 2012). A blended approach breaks down when the online component fails to provide an educational environment that is accessible to all students with limited amounts of stress-inducing issues.

Technology Issue	2022: No Stress (%)	2022: With Stress (%)	2024: No Stress (%)	2024: With Stress (%)
Unstable internet connections	52	16	22	39
Device malfunction	22	12	17	0
Inability to run required software	24	9	17	0
Device not properly configured	28	12	67	0
Inability to access primary device	19	7	30	0
Device breakage	15	8	28	24

Table 1: Technology Issues Experienced and Associated Stress in 2022 and 2024.

Institutional and Self-Sourced Solutions

To address these technology issues, students utilized both institutional and self-sourced solutions. In 2024, students reported borrowing hotspots from their institutions, buying new digital devices, or upgrading their home internet services as standard solutions. This trend was consistent with 2022 findings, where similar strategies were employed to mitigate technology-related challenges.

Course Modality Preferences

The data reveals significant shifts in course modality preferences among first-year undergraduate students from 2022 to 2024. In 2022, a notable 39% of students preferred a half online and half face-to-face modality, while only 24% preferred this modality in 2024. A chi-square test of independence revealed that this change in preference was significant. Similarly, the preference for mostly face-to-face courses substantially increased from 20% in 2022 to 30% in 2024. Yet, the preference for completely face-to-face courses increased from 9% in 2022 to 17% in 2024. These changes indicate a growing inclination towards face-to-face interactions post-pandemic (see Figure 1). This study's results support previous research by Mali and Lim (2021), which found that students preferred face-to-face learning once COVID-19 was no longer an issue.
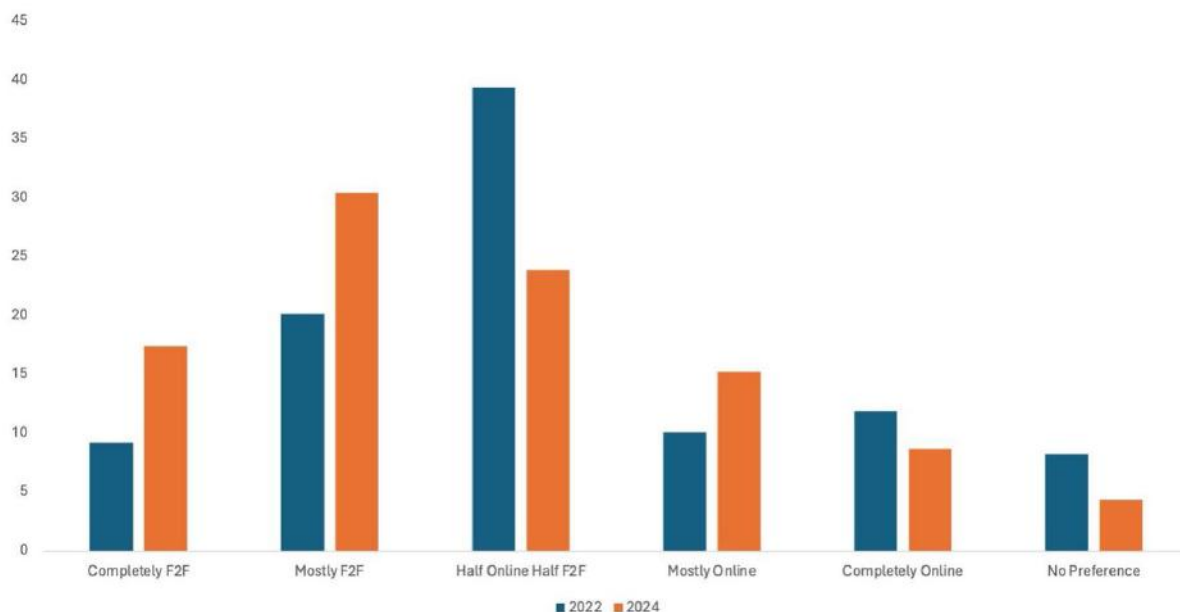
Figure 1: Course Modality Preferences in 2022 and 2024.

Meeting Classmates for Academic Work

Preferences for meeting classmates for academic work have also evolved. In 2022, 28% of students always preferred face-to-face meetings, which increased significantly to 46% in 2024. Similarly, the preference for mostly face-to-face meetings decreased from 43% in 2022 to 22% in 2024. The preference for a half face-to-face and half online modality remained stable from 2022 to 2024. These trends suggest a continued, and even increased, desire for in-person interactions for academic collaboration. These findings align with studies that suggested students wanted more social elements to be incorporated into blended learning (Asih & Alief, 2022; Carrasco et al., 2022). As a result, even though students continue to find a blended course modality preferable, they want the social aspects of face-to-face to have an increased role post-pandemic.

Familiarity With Data Privacy

The data from 2022 and 2024 indicate a shift in students' self-assessed familiarity with data privacy. In 2022, 52% of participants rated their familiarity as average; in 2024, this percentage decreased to 41%. Conversely, the percentage of students rating their familiarity below average increased significantly from 9% in 2022 to 35% in 2024. Additionally, the proportion of students who did not know their familiarity level increased from 4% in 2022 to 7% in 2024. These findings suggest a decline in students' confidence in their data privacy knowledge over time (see Figure 2). Prior research has highlighted a similar pattern. Some students lack information security awareness whatsoever (Avci & Oruc, 2020), while others have an awareness that is not generalizable to the real world (Slusky & Partow-Navid, 2012; Wang, 2022).
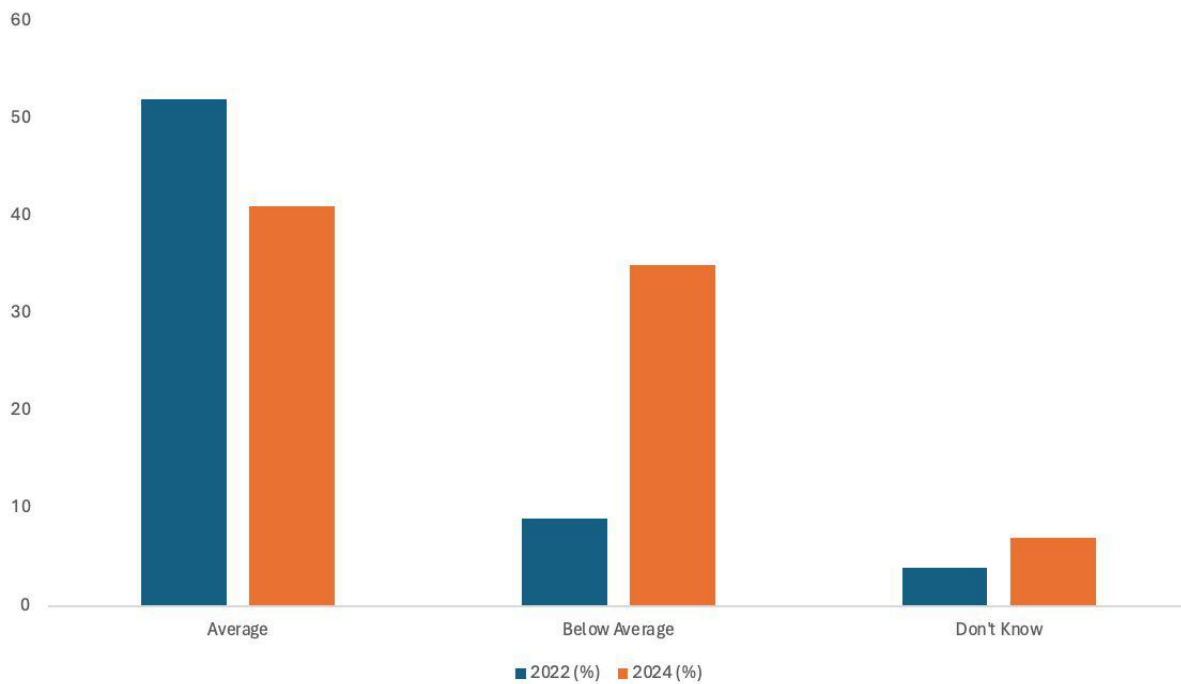
Figure 2: Familiarity with Data Privacy in 2022 and 2024.

Sources of Data Privacy Knowledge

In 2022 and 2024, students reported learning about data privacy from multiple sources. Social media remained the most common source, with 41% in 2022 and 41% in 2024. Teachers were also a significant source, with 39% in 2022 and 39% in 2024. Parents' influence slightly increased from 34% in 2022 to 37% in 2024. However, the percentage of students learning from news sources decreased significantly from 33% in 2022 to 17% in 2024. The percentage of students who reported not learning about data privacy decreased from 9% in 2022 to 4% in 2024, indicating increased engagement with data privacy education.

Sources of Data Privacy Knowledge

In 2022 and 2024, students reported learning about data privacy from multiple sources. Social media remained the most common source at 41% between 2022 and 2024. Teachers were also a significant source, with 39% in 2022 and 2024. Parents' influence slightly increased from 34% in 2022 to 37% in 2024. However, the percentage of students learning from news sources decreased significantly from 33% in 2022 to 17% in 2024. The percentage of students who reported not learning about data privacy decreased from 9% in 2022 to 4% in 2024, indicating increased engagement with data privacy education.

Familiarity With the Institution's Data Privacy Policies

Students' familiarity with their institution's data privacy policies showed a notable decline between 2022 and 2024. In 2022, 52% of students rated their familiarity as average, while this dropped to 41% in 2024. The percentage of students who rated their familiarity as below average increased significantly from 9% in 2022 to 35% in 2024. Additionally, the proportion of students who did not know their familiarity level increased from 4% in 2022 to 7% in 2024. These trends suggest a growing need for institutions to enhance their communication and education regarding data privacy policies.

Conclusion

This study was an investigation into the changes in device and course modality preferences, technology-related stress, and data privacy knowledge among first-year undergraduate students at a private university in Western Japan from 2022 to 2024. The results demonstrated consistent primary device ownership, with laptops remaining the most common primary device. However, there was a noticeable increase in tablet ownership, reflecting the growing availability and use of digital resources optimized for tablet use, such as e-textbooks.

A significant reduction in stress related to running applications and device configuration was observed, suggesting improvements in technology or better student adaptation. Conversely, the increase in stress due to unstable internet connections demonstrates an ongoing need for reliable technological infrastructure. These findings align with existing literature emphasizing the importance of stable internet access and well-equipped devices for effective online learning.

The study also revealed a significant decrease in the preference for blended learning, with a notable shift towards face-to-face interactions. This finding contrasts with the researchers' prediction that students would continue to prefer blended and online learning. The literature supports this trend, highlighting students' desire for in-person interactions once pandemic restrictions were lifted.

Data privacy knowledge among students declined, with an increase in the percentage rating their familiarity as below average. This underscores the need for enhanced education on data privacy, a critical component of students' digital. The reliance on social media and teachers as primary sources of data privacy knowledge suggests that more formal educational interventions are necessary.

Despite the researchers' efforts, several limitations of the study must be acknowledged. The sample consisted of students from a single private university in Western Japan, which may not be representative of the broader population. The data were self-reported, introducing potential biases related to the participants' perceptions and the researchers' influence.

Future research should include a more diverse participant sample to comprehensively understand trends across different educational contexts. Additionally, employing a mixed methods approach could enrich the findings, offering a deeper insight into students' experiences and the factors influencing their technological and educational preferences.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

AI and AI-assisted technologies were used to improve the language and readability of some sections of this article.

References

Alducin-Ochoa, J. M. & Vázquez-Martínez, A. I. (2016). Hybrid learning: an effective resource in university education?. International Education Studies, 9(8), 1. https://doi.org/10.5539/ies.v9n8p1

Asih, R. A. & Alief, L. (2022). Students' experiences and learning objectives: implicationsfor future online learning. Journal of Education and Learning (EduLearn), 16(2), 226-234. https://doi.org/10.11591/edulearn.v16i2.20422

Avcı, Ü. & Oruç, O. (2020). Üniversite öğrencilerinin kişisel siber güvenlik davranışları ve bilgi güvenliği farkındalıklarının incelenmesi. İnönü Üniversitesi Eğitim Fakültesi Dergisi, 21(1), 284-303. https://doi.org/10.17679/inuefd.526390

Bączek, M., Zagańczyk-Bączek, M., Szpringer, M., Jaroszyński, A., & Wożakowska−Kapłon, B. (2021). Students' perception of online learning during the COVID-19 pandemic. Medicine, 100(7), e24821. https://doi.org/10.1097/md.0000000000024821

Carrasco, C. J. G., Lucena, F. J. H., Moreno-Vera, J. R., & García, S. A. (2022). Analysis of a forced blended-learning program in social sciences higher education during the COVID-19 post-pandemic. Education + Training, 65(2), 298-311. https://doi.org/10.1108/et-06-2022-0246

Edelhauser, E. & Lupu–Dima, L. (2020). Is Romania prepared for e-learning during theCOVID-19 pandemic? Sustainability, 12(13), 5438. https://doi.org/10.3390/su12135438

Ehrlich, H., McKenney, M., & Elkbuli, A. (2020). We asked the experts: virtual learning in surgical education during the COVID-19 pandemic—shaping the future of surgical education and training. World Journal of Surgery, 44(7), 2053-2055. https://doi.org/10.1007/s00268-020-05574-3

Elsaid, N., El Nagar, H., Kamal, D., Bayoumi, M., Kamel, M., Abuzeid, A., Elewa, S., Hussein, M., Hussein, H., Elshahidy, A., & Saleh, J. (2021). Perception of online learning among undergraduate students at Suez Canal Medical School during the COVID-19 pandemic: a cross-sectional study. The Egyptian Journal of Hospital Medicine, 85(1), 2870-2878. https://doi.org/10.21608/ejhm.2021.190255

Fang, J., Pechenkina, E., & Rayner, G. (2023). Undergraduate business students' learning experiences during the COVID-19 pandemic: insights for remediation of future disruption. The International Journal of Management Education, 21(1), 100763. https://doi.org/10.1016/j.ijme.2023.100763

Finlay, M. J., Tinnion, D., & Simpson, T. (2022). A virtual versus blended learning approach to higher education during the covid-19 pandemic: the experiences of a sport and exercise science student cohort. Journal of Hospitality, Leisure, Sport & Tourism Education, 30, 100363. https://doi.org/10.1016/j.jhlste.2021.100363

Heirdsfield, A. M., Walker, S., Tambyah, M., & Beutel, D. (2011). Blackboard as an online learning environment: what do teacher education students and staff think? Australian Journal of Teacher Education, 36(7). https://doi.org/10.14221/ajte.2011v36n7.4

Jones, K. & Sharma, R. (2020). On reimagining a future for online learning in the post-COVID era. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3578310

Mahyoob, M. (2020). Challenges of e-learning during the COVID-19 pandemic experienced by EFL learners. Arab World English Journal, 11(4), 351-362. https://doi.org/10.24093/awej/vol11no4.23

Mali, D. & Lim, H. (2021). How do students perceive face-to-face/blended learning as a result of the COVID-19 pandemic? The International Journal of Management Education, 19(3), 100552. https://doi.org/10.1016/j.ijme.2021.100552

Muthuprasad, T., Aiswarya, S., Aditya, K., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID-19 pandemic. Social Sciences & Humanities Open, 3(1), 100101. https://doi.org/10.1016/j.ssaho.2020.100101

Nepal, S., Atreya, A., Menezes, R. G., & Joshi, R. R. (2020). Students' perspective on online medical education amidst the COVID-19 pandemic in Nepal. Journal of Nepal Health Research Council, 18(3), 551-555. https://doi.org/10.33314/jnhrc.v18i3.2851

Peimani, N. & Kamalipour, H. (2021). Online education in the post COVID-19 era: students' perception and learning experience. Education Sciences, 11(10), 633. https://doi.org/10.3390/educsci11100633

Shammari, M. H. A. (2021). Devices and platforms used in emergency remote learning and teaching during COVID-19: a case of English major students in Saudi Arabia. Arab World English Journal, 1, 80-94. https://doi.org/10.24093/awej/covid.6

Sharma, L. & Shree, S. (2023). Exploring the online and blended modes of learning for post-COVID-19: a study of higher education institutions. Education Sciences, 13(2), 142. https://doi.org/10.3390/educsci13020142

Shim, T-E. and Lee, S. Y. (2020). College students' experience of emergency remote teaching due to COVID-19. Children and Youth Services Review, 119, 105578. https://doi.org/10.1016/j.childyouth.2020.105578

Siponen, M. T. (2000). A conceptual foundation for organizational information security awareness. Information Management & Computer Security, 8(1), 31-41. https://doi.org/10.1108/09685220010371394

Slusky, L. & Partow-Navid, P. (2012). Students information security practices and awareness. Journal of Information Privacy and Security, 8(4), 3-26. https://doi.org/10.1080/15536548.2012.10845664

Szopiński, T. & Bachnik, K. (2022). Student evaluation of online learning during the COVID-19 pandemic. Technological Forecasting and Social Change, 174, 121203. https://doi.org/10.1016/j.techfore.2021.121203

Theoret, C. & Ming, X. (2020). Our education, our concerns: the impact on medical student education of COVID-19. Medical Education, 54(7), 591-592. https://doi.org/10.1111/medu.14181

U.S. Department of Education, National Center for Education Statistics. (2022). 2012–22 [Data set]. IPEDS data collection system. Retrieved from: https://nces.ed.gov/ipeds/TrendGenerator/app/answer/2/42? f=1%3D4%7C1%3B2%3D1&rid=87

Wang, X. (2022). Exploring Chinese college students' awareness of information security in the COVID-19 era. European Journal of Education, 5(2), 19-33. https://doi.org/10.2478/ejed-2022-0002

Contact email: danieljmillsedd@gmail.com